

ATTY. DKT NO. 15

PATENT

- 1 This application is based on and claims priority from Provisional Application Serial
- 2 No. 60/197,211, filed April 14, 2000, now abandoned.

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- 1 Pursuant to 37 CFR § 1.121(b)(1)(i)-(ii), please delete the paragraph beginning on
- 2 page 2, line 23 and continuing through page 3, line 2, and replace it with the following
- 3 paragraph, which includes markings to show all the changes relative to the previous
- 4 version of the paragraph:

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1 In some CDNs, such as Akamai FreeFlow FREEFLOW® content delivery, data
2 about the content provider's (CP's) objects, or so-called "metadata," is often directly
3 encoded "in-URL," namely in the HTML or SMIL directives that are modified during the
4 content modification process. More specifically, metadata is the set of all control options
5 and parameters that determine how a CDN content server will handle a request for an
6 object. Such metadata may include, for example, a CP code or other internal tracking
7 number used, for example, to facilitate billing, coherence information (e.g., TTL or
8 fingerprint) about how CDN servers should cache the object and maintain its freshness, a
9 unique serial number value that may be used for load balancing, access control data, a
10 hostname identifying the origin server where a copy of the object may be located, and
11 other feature-specific metadata.

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- 1 Pursuant to 37 CFR § 1.121(b)(1)(i)-(ii), please delete the paragraph beginning on
- 2 page 7, line 30 and continuing through page 8, line 19, and replace it with the following
- 3 paragraph, which includes markings to show all the changes relative to the previous
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1 High-performance content delivery is provided by directing requests for web
2 objects (e.g., graphics, images, streaming media, HTML and the like) to the content
3 delivery network. In one known technique, known as Akamai ~~FreeFlow~~ FREEFLOW®
4 content delivery, HTTP and/or streaming media content may be first tagged for delivery by
5 the tool 106, which, for example, may be executed by a content provider at the content
6 provider's website 115. The initiator tool 106 converts URLs that refer to streaming
7 content to modified resource locators, called ARLs for convenience, so that requests for
8 such media are served preferentially from the CDN instead of the origin server. When an
9 Internet user visits a CDN customer's site (e.g., origin server 115) and, for example,
10 selects a link to view or hear streaming media, the user's system resolves the domain in the
11 ARL to an IP address. In particular, because the content has been tagged for delivery by
12 the CDN, the URL modification, transparent to the user, cues a ~~dynamic Domain Name~~
13 ~~Service (dDNS)~~ CDN domain name service (DNS) to query a CDN name server (or
14 hierarchy of name servers) 104 to identify the appropriate media server from which to
15 obtain the stream. A CDN name server is sometimes referred to herein as a surrogate
16 origin server, as it acts authoritatively on behalf of the CP origin servers who contract with
17 the CDNSP. The CDN typically implements a ~~request-routing mechanism~~ an authoritative
18 DNS (e.g., under the control of maps generated from the monitoring agents 109 and map
19 maker 107) to identify an optimal server for each user at a given moment in time. Further
20 details of a preferred ~~dDNS-based request-routing~~ CDN DNS mechanism are described in
21 U.S. Patent No. 6,108,703, which is incorporated herein by reference.

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- 1 Pursuant to 37 CFR § 1.121(b)(1)(i)-(ii), please delete the paragraph beginning on
- 2 page 24, line 20 and continuing through page 25, line 3, and replace it with the following
- 3 paragraph, which includes markings to show all the changes relative to the previous
- 4 version of the paragraph:

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1 The CDNSP serves objects for customers authoritatively, that is, it holds definitive
2 instances of objects that have been migrated to the CDN. Because many of the benefits of a
3 CDN (e.g., performance, load shedding, availability) are lost if the origin server is
4 contacted upon every request, a mechanism to maintain the freshness, or coherence, on the
5 CDN servers, is highly desirable. The following specifies several mechanisms with which
6 customers may maintain object coherence. While these mechanisms are intended to be
7 used CDN servers, some may affect downstream caches as well. Coherence mechanisms
8 are invoked as metadata, and every object must have a coherence mechanism associated
9 with it in some way. See "~~CDN Server Interface Specification: Metadata Components~~" for
10 ~~coherence mechanism component definitions~~. If an origin server response contains an
11 error status code (i.e., 4xx or 5xx), specified coherence will not be applied to it, although
12 the response may be cached for a short period of time.

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